

REMARKS

This Amendment is filed in response to the Office Action mailed on October 5, 2005. All objections and rejections are respectfully traversed.

Claims 1 to 23 are pending in this application.

Claim 21 to 23 are added to better claim the invention.

35 U.S.C. §112 Rejection

At paragraphs 1-2 of the Office Action, claims 1-6, 9, and 17-20 were rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter.

In reference to Claim 1, was rejected because the examiner said “storing event notifications that are triggered when a queue is eligible for servicing” is indefinite. Applicant has amended the claim to state “storing event notifications in a timing wheel that are triggered when a queue is eligible for servicing.” The event notifications are stored in a timing wheel, and the event notifications are serviced when a queue is eligible to be serviced based on one of the several shaping parameters. (Spec. pg 526-27). Applicant respectfully argues that the claim element, as amended, is not indefinite.

In reference to claim 3, was rejected because the examiner said “early forwarding of the packets” is indefinite. Applicant respectfully urges that “early forwarding of the packets” is definite because Applicant’s invention uses a novel timing wheel configuring

pointer to the queues storing the packets to enable “early” forwarding of the packets without incurring the overhead needed to search the wheel for other reference packets. The “early” forwarding is faster than prior art systems that configured pointer to packets in time slots. (Specification, page 6, lines 3-6). Applicant’s invention allows for faster processing of packets, which acts like “early forwarding of the packets.” Applicant respectfully urges that claim 3 is definite.

In reference to claim 9 was rejected as indefinite because the function of the “virtual time policer (VTP)” is unclear from the context of the claim. The VTP is configured to determine whether the media links are compliant, which means “the VTP timestamp of the output link FIFO 330 is compared with the current real time and the configurable burst value for this priority to determine whether the link VTP is compliant.” (Specification, page 16, lines 6-12). Additionally, the VTP is configured to calculate when a queue is next available for servicing, which is done by the VTP using a timestamp (preferably at least 20 bits of mantissa), an inverse rate for calculating an offset from a packet length, an allowable burst time and access to a real time clock (not shown) indicating the current time with a granularity of at least a scheduler time slot (e.g., the time to send 10 minimum size packets at a peak forwarding rate). (Specification, page 11, lines 26-30) Applicant respectfully notes that claim 9 is definite based on the definitions for compliant and next available for servicing in the specification.

In reference to claim 13 was rejected as being unclear by the statement “a media link interface that references a media link.” Applicant respectfully notes that the state-

ment is clear. The media link interface uses the referenced media link to send the queued packets to an intermediate station. Applicant respectfully notes that claim 13 is clear.

In reference to claim 17, the examiner rejected “if the queue is inactive for the CIR, activating the CIR and incrementing an aggregate CIR bandwidth for a media link” as being unclear. Applicant respectfully urges that claim 17 is clear because the step is incrementing an aggregate CIR bandwidth and not the CIR of the inactive queue. The step is to increment the aggregate CIR bandwidth, is accomplished by assigning guaranteed CIR bandwidth to the now active queue. Applicant respectfully notes claim 17 is clear.

In reference to claim 20, the value of “queue descriptor” is unclear. Claim 18 is amended to add the included information in the “queue descriptor.” (Specification, page 13, lines 25-28).

35 U.S.C. § 102

At paragraphs 3-4 of the Office Action, claims 1-4, 6-15, and 17-20 were rejected under 35 U.S.C. §102 as being anticipated by Fan et al., US Patent No. 6,408,005, Issued on June 18, 2002, hereinafter Fan.

The present invention, as claimed in representative claim 1, comprises in part:

1. A method for integrating traffic shaping and link sharing functions to enable scaling of a plurality of queues multiplexed to media links of an intermediate station in a computer network, the queues storing data packets that are destined for the media links, the method comprising the steps of:

assigning committed information bit rate (CIR) and excess information bit rate (EIR) bandwidth values per queue, along with a shaped maximum bit rate per media link;

uniformly scaling the EIR bandwidths of all queues sharing a media link so that the sum of all scaled EIR bandwidths equals an available bandwidth of the shaped media link;

calculating when a queue is next eligible for servicing; and

storing event notifications in a timing wheel having hash entries identifying a queue, a media link, and a priority, the event notifications are triggered when a queue is eligible for servicing.

By way of background, Fan describes a dynamic rate control scheduler for scheduling cells. The scheduler uses a switch with a minimum guaranteed rate applied to a set of traffic streams. When a stream uses less than their minimum rate guarantees, an excess bandwidth is made available to streams which transmit in excess of their minimum rates. The distribution of excess bandwidth is determined by weights assigned to the streams. Additionally, Fan describes a using a timing wheel and four linked lists, where each list is for each priority level. The packets are delivered in round robin fashion from each bin.

Applicant respectfully urges that Fan does not anticipate Applicant's claimed novel step of ***storing event notifications in a timing wheel having hash entries identifying a queue, a media link, and a priority, the event notifications are triggered when a queue is eligible for servicing.*** In further detail, Applicant's invention claims a timing wheel which stores future event notifications that are stored when a queue is eligible to be serviced according to one of several shaping parameters (CIR, EIR, and maximum bit rate per minute). Additionally, the timing wheel configures pointers to the queues storing

the packets. Furthermore, the timing wheel stores hashed entries for identifying a queue index (Q), a media link interface (I), and a priority value (P) for each queue, so as to limit the slot descriptors size to store more *event notifications* to show when a *queue is eligible for servicing* in the future. In contrast, Fan uses four bins tied to the timing wheel for sending packets, where each queue is for a different priority, and a round robin for sending packets from the four bins. In comparison, Applicant's invention uses hash entries to point to a queue, media link, and state a priority to avoid collisions of packets over the same link at the same time. Additionally, Applicant's timing wheel allows the entries to be linked and stored at a later time at a higher priority.

Accordingly, Applicant respectfully urges that the Fan patent is legally precluded from anticipating the claimed invention under 35 U.S.C. §102 because of the absence from the Fan patent of Applicant's *storing event notifications in a timing wheel having hash entries identifying a queue, a media link, and a priority, the event notifications are triggered when a queue is eligible for servicing.*

35 U.S.C. §103

At paragraphs 5-6 of the Office Action, claim 5 was rejected under 35 U.S.C. §103 as being unpatentable over Fan.

At paragraph 7 of the Office Action, claim 16 was rejected under 35 U.S.C. § 103 as being unpatentable over Fan, in view of Gemar et al., US Patent No. 6,483,839, hereinafter Gemar.

Applicant respectfully notes that claims 5 and 16 are dependent claims that depend from independent claims which are believed to be in condition for allowance. Accordingly claims 5 and 16 are believed to be in condition for allowance.

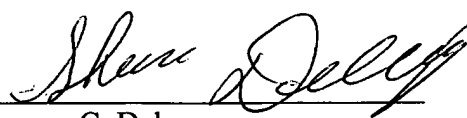
All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims, and therefore in condition for allowance.

Favorable action is respectfully solicited.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,


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